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January 27, 1995

BY MESSENGER

Mr. William F. Caton, Acting Secretary  
Federal Communications Commission  
1919 M Street, N.W., Room 222  
Washington, D.C. 20554

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JAN 27 1995

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

Re: Interconnection, CC Docket 94-54

Dear Mr. Caton:

American Personal Communications ("APC") hereby notifies the Commission that representatives of APC today met with Michael Wack, Esq., Deputy Chief, Policy Division, Wireless Telecommunications Bureau, and Ms. Barbara Esbin, Senior Policy Advisor, Wireless Telecommunications Bureau. The matters discussed are contained in APC's pleadings on file. In addition, APC left a copy of the attached chart with Mr. Wack and Ms. Esbin. A summary of the explanation of the chart is attached.

Please direct any inquiries concerning this matter to the undersigned.

Very truly yours,



Kurt A. Wimmer

Attorney for American  
Personal Communications

cc: Michael Wack, Esq.  
Ms. Barbara Esbin

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## INTERCONNECTION REQUIREMENTS FOR CMRS ROAMING

Interconnection, required to enable roaming among CMRS providers, is necessary for validating subscriptions and delivering services to roaming customers. Technically this is accomplished by means of Signaling System # 7 (SS#7) and handoff trunks.

SS#7 provides a transport mechanism for messages between databases of the various CMRS providers. SS#7 networks are often provided by independent third parties such as ITN and NACN and GTE TSI. Each CMRS provider contracts with the SS#7 provider for ports on the SS#7 network and for the messages transported over that network. Messages are routed from one database to another by means of a database address.

The messages transported by the SS#7 network among the CMRS databases serve several purposes: subscription validation (should a customer be allowed to make and receive calls); location updates (for automatic call delivery); feature profiles for an individual customer (such as, long distance carrier information, or three-way calling service). SS#7-carried messages along with handoff trunks allow a customer to drive from one CMRS provider's territory to another without dropping any in-progress calls.

The required messages are transported between a Home Location Register (HLR) and a Visited Location Register (VLR). A customer's permanent database record is kept in the HLR owned by the CMRS provider through which the customer has a subscription. The VLR is used to keep a temporary copy of a customer's database record in the switch serving the customer at any moment in time, or any place. When that customer is roaming( i.e., being provided service by CMRS provider with which the customer does not have a financial relationship) the HLR to VLR messages are transported through the SS#7 network cloud, as shown.

For example, CMRS X is intending to serve customer X2. When X2 turns on the phone, it transmits its mobile service number (MSN) and equipment serial number (ESN) to the CMRS switch (the MTSO). The MTSO recognizes that the MSN is for one of the CMRS' own customers. It sends a message to its own HLR for service information, which is then returned to the MTSO for deposit in its VLR. Now the customer can make and receive calls.

On the other hand customer Y1 is a customer of CMRS Y. When Y1 turns on the phone, the phone transmits its "unique" MSN and ESN to the CMRS X's MTSO. CMRS X's MTSO recognizes that this MSN is from a different CMRS' IILR. It then addresses a message to be transported through the SS#7 cloud to CMRS Y's IILR. The MSN of customer Y1 is used for creating the address for routing this message to the proper IILR. CMRS Y's IILR validates customer Y1's service, and it addresses, back to CMRS X's MTSO/VLR, Y1's service profile. Y1 may now begin making and receiving calls as a roaming customer of CMRS X.

This exact same process could work for roaming between CMRS operators at 1900 MHz and 800 MHz when dual band phones are available (anticipated by handset manufacturers in early 1996). However, it will only work if 1) 800 MHz CMRS operators agree to allow roaming customers whose HLR database is owned by a 1900 MHz CMRS provider.; 2) the 800 MHz CMRS providers program their databases to communicate with 800 MHz CMRS provider databases.

The SS#7 cloud will transport anyone's messages across it. But, if the databases at each end refuse to acknowledge each others messages, no beneficial transactions can occur. Effectively, the 800 MHz CMRS provider could say to the upstart 1800 MHz provider, "while you are struggling to build your network nationwide, I will not let you , or your customers, take advantage of my nationwide network built with my ten year headstart."

